telephony

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Exchange cost studies: an essential ingredient for telephone companies

STUART G. McDANIEL and WILLIAM WOHLHAGEN

THE RATE structure for local telephone service is changing.

Inclusive monthly flat rates set on a value of service basis are coming to an end. That inclusive rate used to cover unlimited local calling, a telephone set, directory assistance, repair service, inside wiring and an access line to the local central office. The rate was relatively low because local service costs were subsidized by other services.

Local flat rates were established under a value of service concept that set lower rates in small exchanges and higher rates in large exchanges. The concept served the industry well because it was easy to administer and received a high degree of regulatory and customer acceptance.

However, local rates had to be partially unbundled to accommodate the introduction of competition into the terminal equipment market, and in intrastate and interstate toll markets. Partial unbundling has been accomplished but most of the industry still operates with a local flat rate that continues to package in a single rate local usage and an access line to the central office. The monthly rate under the value service concept differs between exchanges according to the size of the calling area because of the assumed difference in relative cost and value.

Additional steps are necessary to complete the unbundling of local exchange rates that will produce a rate structure compatible with the operating environment that local exchange telcos will face. The past pricing practices of the industry and its regulators have, in large measure, brought about the competition which now exists.

If telephone rates historically had been set on the basis of the actual costs of providing services, the *status quo* may have been maintained because no potential competitor would have dared to enter the market given the economies of scale the telephone industry enjoyed.

Competition simply will not end with the terminal equipment and message toll markets. Prices set in a truly competitive environment will tend to equal or move in the direction of costs. To the extent future rate structures do not reflect actual costs, competition will increase.

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Lessons

Historically, most Independent telcos have derived their revenues from three principal sources: exchange services, toll services and vertical services. The situation in each of these markets has changed. Many Independents discovered that their prices for terminal equipment did not cover their costs when the contribu-

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tion from toll services diminished or vanished.

This situation developed largely when rates for terminal equipment were set without complete knowledge of what the actual costs of providing the equipment were. Frequently, such costs as inventory costs were ignored while other expenses were understated, particularly maintenance expenses. Some telcos have found that even in the new environment they simply cannot compete in the terminal equipment marketplace, either on a lease or sale basis, because their labor costs, including benefits, supervision and overhead, so far exceed those of the competitors that the telcos are better off financially if they abandon the business. Some telcos may totally restructure their terminal equipment business in order to provide it at a profit in case they must become a supplier of last resort.

Revenues derived from toll services, by whatever means the revenues are obtained, will likely continue to be an important source of revenues to telcos for many years. However, the contribution this source of revenues makes to the bottom line will undoubtedly erode as competition drives toll rates toward the marginal cost of providing service. It is not unusual to find companies receiving $1.50 per message of revenue through the settlements process, whereas the actual revenue generated by the company may be only $1.00. No viable provider of toll services could pay $1.50 in order to obtain $1.00 of revenue. As a result, the revenue contribution from this source probably will decline, particularly for those companies whose aggregate toll revenues greatly exceed billed revenues as a result of past settlements procedures.

What about the most basic service offered by telcos, exchange service? Telcos must price those services in such a way as to assure their continuing financial viability while continuing to provide universal service and minimizing the threat of bypass to the local network. Accomplishing these three goals simultaneously is a problem with the present rate structure.

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Basic exchange rates have been established largely by reference to the value of service concept. Traditionally, exchanges have been grouped according to the number of customers who could be called without incurring a toll charge. This method of pricing resulted in customers in larger exchanges paying higher rates than customers in smaller exchanges.

However, the evidence suggests that the cost of providing exchange service on a unit basis is higher in smaller communities and lower in larger communities. This situation is exactly the reverse of the situation currently reflected in rate structures based on the old value of service concept. Further unbundling is required to remove from the basic exchange rates local and EAS (extended area service) usage costs because access line costs are unrelated to, and vary independently, from usage costs. The access line cost/pricing problem is separate from the local and EAS usage cost/pricing problem, and it should be considered separately. The place to begin the restructuring process is with the most basic telco service, the access line. This would include the facilities necessary to provide dial tone at the customer's premise but not usage.

The access line, local and EAS usage must be priced separately and independently from each other.

The initial step is to discover the actual cost of providing an access line. Cost of service study procedures have been developed to identify access line costs for business, residence and trunks, as well as the costs of providing other services, including the costs of local and EAS usage, and toll service. While it may be informative to discover that, for example, it costs a telco $18 a month to provide a residential access line without regard to usage or toll subsidies, further analysis is required in order to convert that knowledge into an appropriate rate design based on costs.

One alternative, of course, would be to provide access lines at a uniform rate in all exchanges served by a given telco. Establishing an invariable access line rate by some criteria can be seen as a conscious decision to average costs company-wide. Is it the right decision for the future?

Access line rates which are averaged company-wide constitute a subsidy of high cost rural customers by low cost urban customers. This would further increase the incentive for urban customers to bypass the local network, especially for heavy toll users who already subsidize local costs through toll rates. Accordingly, further steps are required to provide more detailed cost information than most present cost of service studies now show.

Tariffs which propose setting

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'It must be recognized that the cost of service study will reveal the true cost of an access line without regard to any subsidies presently received from toll service or from any other source. The average cost per access line probably will greatly exceed the average rate because of subsidies still being received. . . .'

access line rates based on criteria other than the value of service exchange rate class schedules will require substantiation by cost of service studies which will identify access line costs on an exchange or grouping of exchange basis. Such access line cost data should be developed in order to support appropriate rate structures. The results of fully allocated cost of service studies indicate that the subscriber access line, defined as the local telephone loop without usage, represents the major cost in providing local service; it is typically 80% to 90% of the total cost when local and EAS usage is included. Moreover, the telcos which have the highest subscriber access line costs are the telcos which are more rural in nature.

Where should an analysis of exchange costs begin? Associated Utility Services, Inc., Moorestown, N.J., has developed fully allocated cost of service procedures to identify access line costs on a company-wide basis. These same cost of service procedures may be used to break down access line costs on an exchange basis.

For an initial study, it is a necessary step to observe differences in costs between exchanges in order to either establish rates on an exchange basis or to form a guide in grouping exchanges based on costs.

The difficulty is in defining the criteria for grouping exchanges. When access line costs are observed on an exchange-by-exchange basis and compared with where those exchanges fall within existing rate groups based on calling scope, significant disparities in costs for exchanges within existing rate groups are discovered. These disparities arise because some small exchanges may have significant EAS availability which puts them in a high rate group. However, access line costs exclude local and EAS usage; therefore, the use of existing rate groups based on calling scope form an inappropriate basis upon which to group exchanges based on actual costs.

Table I

	Company average	Density based rate group: Rural density	Suburban density	Urban density
Residence single party access line monthly cost	$18.00	$25.20	$19.80	$14.40
Ratio of exchange costs to company average cost	1.0	1.4	1.1	0.8
Proposed rate schedule	$10.00	$14.00	$11.00	$ 8.00
Present rate schedule	$10.00	$ 8.50	$10.00	$11.50

The difference in access line costs between exchanges can be more closely associated with the cost of providing the local loop or, stated another way, outside plant facilities. This fact suggests the conclusion that density of telephone development per square mile may be the most logical basis upon which to group exchanges for rate treatment since density greatly affects the cost of outside plant facilities on a per access line basis. While certainly not perfect by any means, this is a more appropriate basis upon which to group exchanges than the existing groupings based on calling scope which, in the final analysis, have nothing to do with total costs, including access line costs.

Adjustments may be required to reflect a particular company's individual circumstances. For instance, a company with a large number of multi-party access lines and a high degree of line fill may require weighting of the observed densities in order to place an exchange in the proper density group. Other criteria also could be employed, such as classifying exchanges on the basis of average local loop length. However, for most telcos, this information is not readily available; density estimates, on the other hand, can be readily obtained, tracked over time and allow rate reclassification based on change.

Having grouped exchanges on the basis of density, the average cost per access line for exchanges in each density group can be calculated. These costs then are compared to the company-wide average cost to develop ratios which can be used to redesign rates. It must be recognized that the cost of service study will reveal the true cost of an access line without regard to any subsidies received from toll service or from any other source. The average cost per access line probably will greatly exceed the average rate because of subsidies still being received, even by a company which is recovering its current revenue requirements.

Table I provides a simple illustration of the concept. In the table, monthly cost of providing a residential single-party access line is assumed to be $18. Moreover, exchanges have been grouped into three density bands: rural, suburban and urban. Exchanges in the rural density band have a monthly cost of $25.20 while exchanges in the urban density group have an average monthly cost of $14.40. A ratio of cost for each of the density bands with the company-side average has been computed. Finally, the table suggests what the present rate schedule based on value of service principles might look like. The proposed access line rate structure is, of course, precisely the opposite of the rate structure currently being used.

The rate schedule proposed in Table I when compared with the present rate schedule likely would not meet with overwhelming customer or regulatory acceptance, particularly in exchanges which fall within the rural density group. Therefore, it would be necessary to moderate the impact of such dramatic rate changes by using a phased procedure over a period of several rate cases. Nevertheless, the cost of service information developed on this basis certainly

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'When access line costs are observed on an exchange-by-exchange basis and compared with where those exchanges fall within existing rate groups based on calling scope, significant disparities in costs for exchanges within existing rate groups are discovered.'

provides a useful guide in determining the direction rates should move and provides a sound basis from which to defend such proposals before regulatory agencies.

Many telephone companies have two or more rate zones within an exchange. In the more densely populated areas, service is classified as being within the base rate area; service in those areas is priced lower than service in locations within the exchange but outside the base rate area. These rate differentials for individual line service may be several dollars per month. In the future, it is very probable that these extra charges will come under attack and cost justification will be requested. Access line cost studies will be helpful in addressing this question.

Finally, the cost of service study develops exchange and EAS usage costs separately from access line costs and, therefore, facilitates the development of a rate structure which prices these elements separately from access line prices. Of course, there are several ways in which usage may be priced. While justification may exist for studying local and EAS usage costs on an exchange-by-exchange basis, this is less important at this time because studies indicate that these costs do not vary from exchange to exchange as significantly as access line costs vary. Moreover, there appears to be no significant social pressure to subsidize local and EAS usage. □

'Access line rates which are averaged company-wide constitute a subsidy of high cost rural customers by low cost urban customers. This would further increase the incentive for urban customers to bypass the local network. . . .'

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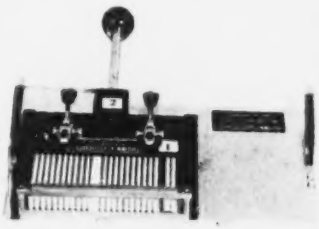

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